

Appl. No. 10/671,461
Amendment dated: October 27, 2005
Reply to OA of: July 27, 2005

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A deep trench structure manufacturing process, comprising the steps of:

providing a substrate;

forming a deep trench in said substrate;

forming a dielectric layer in said deep trench, said dielectric layer covering the sidewall and bottom of the deep trench;

filling the deep trench with a first conductive layer;

removing a portion of said dielectric layer not covered by said first conductive layer where a gap is formed between the sidewall of the deep trench and the first conductive layer;

refilling the deep trench with another dielectric layer, said another dielectric layer covering a portion of the sidewall of the deep trench not covered by said first conductive layer, and covering the gap;

partially removing said another dielectric layer, while leaving at least a portion thereof filled in ~~[[a]] the gap between the sidewall of the deep trench and the first conductive layer;~~

forming a collar oxide layer in the deep trench, said collar oxide layer covering a portion of the sidewall of the deep trench not covered by the dielectric layers;

filling the deep trench with a second conductive layer;

removing a portion of said collar oxide layer not covered by said second conductive layer; and

filling the deep trench with a third conductive layer.

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2(original). The process as recited in Claim 1, wherein the material of said dielectric layer is the same as that of said another dielectric layer.

3(original). The process as recited in Claim 2, wherein the material of said dielectric layer and said another dielectric layer is nitride.

4(original). The process as recited in Claim 3, wherein the material of said dielectric layer and said another dielectric layer is silicon nitride.

5(original). The process as recited in Claim 1, wherein said another dielectric layer is a nitride layer.

6(original). The process as recited in Claim 5, wherein the material of said another dielectric layer is silicon nitride.